solution. Five ml of water was now added to the solution in the separatory funnel, the mixture was shaken vigorously, and the solution was again allowed to stand until two layers formed. The aqueous phase was drained into the beaker that originally contained the ether solution. The washing with another 5-ml portion of water was repeated once more.

To convert the purified uranyl nitrate to oxide a little water was added to the ether, the ether was cautiously evaporated, and the residue was ignited to U_3O_8 at 1000°C. It was afterward found preferable to add 20 ml of water to the ether solution, shake vigorously for 1 minute, and allow the liquid to separate into two layers. The water layer containing the uranium was drained into a suitable dish, and the extraction with 20-ml portions of water was repeated until the ether above the water was colorless. Three or four such extractions were sufficient to remove the uranium. The combined water extracts were evaporated to dryness, and the uranyl nitrate in the residue was ignited to U_3O_8 at 1000°C. The ether from which the uranyl nitrate had been removed was suitable for future extractions.

The procedure was also applied to the extraction of uranium from pitchblende and carnotite ore concentrates by digesting the ore concentrate with nitric acid, evaporating to dryness, and extracting the residue with ether. The efficacy of this method of purification is shown in Table 1. The table shows that in many cases impurities that were not detected in the original oxide were concentrated and detected in the water extract. Note especially Ce, Co, Cr, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sc, Sm, Tb, Tm, and Y.

DISCUSSION

It was evident that the purification of crude uranium oxide and the removal of uranium from ore concentrates by conversion of the uranium to uranyl nitrate and extraction with ether had possibilities because practically all impurities were removed in a single operation. Tests by L. F. Curtiss[7] indicate that practically none of the radium in the original ore was extracted by the ether.

Under stress of wartime conditions not all the possible confirmatory tests were made, but, as a check on removal of the rare earths, the purified oxides obtained from no. 155 and no. 181, Table 1, were put through a second purification by the same procedure. The water extracts in this case showed no rare earths. Tests by K. D. Fleischer indicated that if 0.5 mg of "rare earth" oxides had remained in the purified oxide, a positive test would have been obtained here. These tests showed also that by this simple procedure the combined "rare earths" in the purified oxide were reduced to less than 5 parts per million. The spectrochemical tests showed that not more than 0.5 part of cadmium or boron per million remained in the purified material.

SUMMARY

A procedure is given for the purification of uranium oxide by converting the oxide to the nitrate and partitioning the nitrate between a large amount of ether and a relatively small amount of water. In modified form, the procedure was found to be applicable to pitchblende and carnotite ore concentrates, as indicated in Table 1.

[7] Chief of Section on Radioactivity at the National Bureau of Standards.

BOTANY.—*Notes on North American Leguminosae.*[1] FREDERICK J. HERMANN, U. S. Department of Agriculture.

In the course of routine identification of collections of Leguminosae sent to the U. S. Department of Agriculture over a period of several years the advisability of proposing the following transfers and changes in status has become apparent. Included also is a diagnosis for an apparently hitherto undescribed *Phaseolus* from Mexico.

[1] Received March 25, 1948.

Acacia schaffneri (S. Wats.), comb. nov.

Pithecolobium schaffneri S. Wats., Proc. Amer. Acad. **17**: 352. 1882; *Samanea schaffneri* Macbride, Contr. Gray Herb. **59**: 2. 1919; *Poponax*

schaffneri Britton & Rose, N. Amer. Flora **23**: 89. 1928.

Acacia pinetorum, nom. nov.

Vachellia peninsularis Small, Man. Southeastern Flora 654. 1933; not *Acacia peninsularis* (Britton & Rose) Standl., Field Mus. Publ. Bot. **11**: 158. 1936, based on *Senegalia peninsularis* Britton & Rose, N. Amer. Flora **23**: 116. 1928.

Schrankia angustisiliqua (Britton & Rose), comb. nov.

Leptoglottis angustisiliqua Britton & Rose, N. Amer. Flora **23**: 143. 1928.

Schrankia chapmani (Small ex Britton & Rose), comb. nov.

Leptoglottis chapmanii Small ex Britton & Rose, N. Amer. Flora **23**: 141. 1928.

Desmanthus pringlei (Britton & Rose), comb. nov.

Acuan pringlei Britton & Rose, N. Amer. Flora **23**: 134. 1928.

Caesalpinia colimensis, nom. nov.

Brasilettia glabra Britton & Rose, N. Amer. Flora **23**: 321. 1920, not *Caesalpinia glabra* (Mill.) Merrill, Philipp. Journ. Sci. **5**: 54. 1910.

Caesalpinia pumila (Britton & Rose), comb. nov.

Guaymasia pumila Britton & Rose, N. Amer. Flora **23**: 322. 1930; *Caesalpinia gracilis* Benth. ex Hemsl., Diag. Pl. Nov. 9. 1878, not Miq., Fl. Ind. Bat. **1**: 110. 1855.

Dalea tuberculina (Rydb.), comb. nov.

Parosela tuberculina Rydb., N. Amer. Flora **24**: 89. 1920.

Petalostemum candidum Michx., var. **oligophyllum** (Torr.), comb. nov.

Petalostemum gracile var. *oligophyllum* Torr. in Emory, Notes Mil. Rec. 139. 1848; *P. candidus* var. *occidentalis* Gray ex Heller in Britton & Kearney, Trans. N. Y. Acad. Sci. **14**: 33. 1895; *Petalostemon oligophyllus* "Torr.," Smyth, Trans. Kans. Acad. Sci. **15**: 61. 1898; *P. occidentale* (Gray) Fernald, Rhodora **39**: 28. 1937.

Tephrosia virginiana (L.) Pers., var. **leucosericea** (Rydb.), comb. nov.

Cracca leucosericea Rdyb., N. Amer. Flora **24**: 163. 1923; *Tephrosia leucosericea* (Rydb.) Cory, Rhodora **38**: 406. 1936.

Tephrosia ambigua (M. A. Curtis) Chapm., var. **intermedia** (Small), comb. nov.

Cracca intermedia Small, Bull. Torr. Bot. Club **21**: 303. 1894.

Astragalus tenellus Pursh, var. **strigulosus** (Rydb.), comb. nov.

Homalobus strigulosus Rydb., Bull. Torr. Bot Club **34**: 420. 1907; *Astragalus tenellus* f. *strigulosus* Macbr., Contr. Gray Herb. **65**: 34. 1922.

Astralagus michauxii (Kuntze). comb. nov.

Tragacantha michauxii Kuntze, Rev. Gen. 941. 1891; *A. glaber* Michx. 1803, not Lam. 1783.

Astragalus ceramicus Sheld., var. **filifolius** (Gray), comb. nov.

Astragalus pictus var. *filifolius* A. Gray, Proc. Amer. Acad. **6**: 215. 1864; *Psoralea longifolia* Pursh, Fl. Amer. Sept. 741. 1841, not *Astragalus longifolius* Lam. 1783; *Astragalus mitophyllus* Kearney, Leafl. W. Bot. **4** (8): 216. 1945.

The above combination is necessitated by the fact that Gray's *Astragalus pictus* (Proc. Amer. Acad. **6**: 214. 1864) is a later homonym of the validly published *A. pictus* Boiss. & Guillardot in Boiss., Diagn. Pl. Orient. Ser. 2, **3** (6): 55. 1859, so that *A. ceramicus* Sheld. must be taken up in its stead for our American plant. Although Dr. Kearney's epithet is available for Gray's var. *filifolius* when treated in specific rank, the proportion of specimens intermediate between it and *A. ceramicus* that have come to the attention of the writer leads to the conclusion that varietal status may be more appropriate for it.

Centrosema arenicola (Small), comb. nov.

Bradburya arenicola Small, Fl. Southeastern U. S. 651. 1903.

Desmodium arenicola (Vail), comb. nov.

Meibomia arenicola Vail, Bull. Torr. Bot. Club **23**: 140. 1896; *Hedysarum lineatum* Michx., Fl. Bor. Amer. **2**: 72. 1803, not L. 1759; *Desmodium lineatum* (Michx.) DC., Prodr. **2**: 330. 1825.

Although the name *Desmodium lineatum* (Michx.) DC. has been in general use for this plant it can be maintained only in spite of Article 61. An unfortunate consequence of this rule, as it now stands, is that a later homonym is rendered permanently *hors de combat,* even though the specific epithet upon transference to another genus would not constitute a homonym in its new context.

Rhynchosia simplicifolia (Walt.) Wood, var. **intermedia** (T. & G.), comb. nov.

Rhynchosia tomentosa β intermedia T. & G., N. Amer. Fl. 1: 285. 1838; *R. intermedia* (T. & G.) Small, Man. Southeastern Flora 715. 1933.

Phaseolus neglectus, sp. nov.

Herba volubilis; stipulis lineari-oblongis, 3–5 nerviis, 5–6 mm longis, rigidis; stipellis lineari-oblongis, 2–3 mm longis; foliolis deltoideo-acuminatis vulgo plus minusve lobatis; pedunculis 5–11 cm longis: bracteis persistentibus, rigidis, 6–9 mm longis, 5-nerviis, subtus plerumque pilosis: pedicellis tenuibus glabratis; bracteolis caducis, uninerviis; calyce campanulato-cupuliformi; corolla 20 mm longa; vexillo obovato, valde emarginato; alis orbiculari-ovatis; ovario dense piloso.

Herbaceous vine; stems slender, sparsely puberulous with reflexed hairs to glabrate; stipules linear-oblong, 3–5 nerved, 5–6 mm long, rigid; petioles puberulous to glabrate, 3–6 cm long; stipels linear-oblong, rigid, 2–3 mm long; leaflets 3, membranaceous, deltoid-acuminate, sparsely puberulent above, glabrous to sparsely puberulent beneath, 2–6 cm long, 2–4.5 cm wide, lobed (often only shallowly so or even entire), the median 3-lobed, the lateral 2-lobed, the lobes round-ovate and generally shallow; peduncles slender, 5–11 cm long, 11–25-flowered; bracts persistent, green, lanceolate-acuminate, firm, 5-nerved, generally more or less pilose beneath, sparingly so to glabrate above, 6–9 mm long, 1–1.5 mm wide at base; pedicels slender, glabrate, 3.5–5 mm long; bracteoles caducous, green, narrowly linear-lanceolate, one-nerved, glabrous, 2–2.5 mm long; calyx campanulate-cupuliform, 2.5–3.5 (lower lip up to 5) mm long, very sparingly ciliolate, the lower lip irregularly pilose, prominently 3–lobed with median lobe 2.5 mm long, acute, upper lip very shallowly 2–lobed; corolla 20 mm long, pale salmon to light blue; standard obovate, 16 mm long, 12 mm wide, deeply emarginate, the upper half reflexed; wings orbicular-ovate, abruptly contracted into a broad claw, its lower half adnate to the keel; keel tubular, with two complete coils; free stamen with a reniform enlargement above the base; style-beard extending around the first coil; stigma lateral; ovary linear, densely pilose.

Nuevo León, Mexico in oak woods along trail up Sierra de la Cebolla from La Trinidad, Municipio de Montemorelos, *C. H. Muller* 2881, Aug. 20, 1939 (TYPE—U. S. National Arboretum Herbarium).

Nearest allied to *Phaseolus foliaceus* Piper, of the Sierra Madre. From this it differs in its longer, linear-oblong, rather than triangular-lanceolate stipules; its 5-nerved, linear-lanceolate bracts which are pilose below; its shallowly lobed leaflets; longer peduncles bearing racemes with more numerous flowers; campanulate-cupuliform calyx which is almost imperceptibly ciliolate; corolla 20, rather than 10, mm long; obovate, deeply emarginate standard; and orbicular-ovate wings.

MYCOLOGY.—*Two new species of* Physarum.[1]

G. W. MARTIN, State University of Iowa.

The two species of *Physarum* here noted were included in the extensive collections of Myxomycetes made by William Bridge Cooke on Mount Shasta, Calif., and submitted by him for identification. One of them proves to be identical with two old collections from Mount Rainier, Wash., which have been in this laboratory for many years awaiting determination. Both appear to be clearly distinct from any recognized species in this large genus.

[1] Received November 5, 1947.

Physarum rubronodum, sp. nov.

Sporangiate, globose to obovate or pulvinate, sessile or borne on weak, strandlike stalks produced as extensions of the hypothallus, pinkish brown, or dark when lime is scanty in peridium, 1–1.5 mm in diameter, densely clustered on a common hypothallus; peridium double, the outer layer cartilaginous, calcareous, shining, crustose, smooth except for a coarse overlying reticulation or, when lime is scanty, dark and lacking the reticulation, the inner layer membranous, closely applied, colorless,